Features

Pipped at the post

A new study finds that stud fees may not reflect the future racing value of a foal, writes **Nigel Williams**.

The millions of pounds spent by racehorse owners on the sperm of race champions may have been misdirected according to a new study, which fails to find a strong link between top racing achievement and genes. While geneticists working with other species increasingly reveal the complexity between genotype and complex phenotypes, the horse-racing world appears to have put substantial money behind parentage. If a stallion has been a star on the racecourse, then he's seen to be a good bet amongst breeders as a father of their next foal. Complex and lucrative arrangements have been established by the stud owners to tap into a stallion's field success and horse breeders' predilections. Some top winners can now mate with up to 150 mares per year, at great profit for their owners. Although the sums won by top flat course racehorses are enormous, the serious money has always been made out of sight in the sheds of the big stud farms. But what are the people paying for?

Alastair Wilson, an evolutionary biologist at the University of Edinburgh, with his colleague Andrew Rambaut, have analysed the lifetime earnings of more than 4,000 horses used for racing and breeding since 1922. Because the money a horse earns in its life is determined by genes to a minor extent, selective breeding will have some influence over a horse's abilities, they found.

"But while there are good genes to be bought, it does not appear that you get what you pay for," they write in the Royal Society's *Biology Letters* (published online).

"The offspring of expensive stallions might tend to win more money, but not necessarily because they have inherited the best genes," said Wilson. "It is likely those breeders best able to pay high stud fees are also those who are able to spend more on care of the horse, how it is trained, and who rides it — all of which will contribute more to how much it will win."

There are situations where good genes become important: if every breeder spent a similar amount on care of a horse throughout its life, for example, then the difference between a winning or losing horse would come down to the details, such as the parents. In that situation, picking good parents could give a foal an edge.

Rather than having any underlying genetic basis, the researchers' analyses show that the phenotypic association between fees and lifetime earnings arises from environmental, not genetic, effects. It appears that horse breeders may have been misdirecting some of their cash.

"Our results show that genetic variance exists for lifetime prize earnings as well as more specific traits measured on the track. However, if the goal is to maximise lifetime prize winnings, then it seems clear that stud nomination fees are not an honest signal of a stallion's genetic quality."

Well trained: The success of a horse on the racetrack may be more due to training and management than the genes of its parents. (Picture: Julian Herbert/Getty Images.)